Catalyst Measurement

version 2014-09-123

Color Coding Legend

Data Entry Cell	Calculated Cell	Acceptable Percent Difference Calculation	Potential Compliance Issue: Percent Difference Calculation	Instrument Calibration Out of Range

Daily Calibration Results

	End Rod Result	Accuracy (mm)
25 mm End Rod	24.99	0.015
50 mm End Rod	49.99	0.01
75 mm End Rod	74.98	0.02

Engine Family	FWGYC0.15S4A
VIN/Serial No	LFFWKT3C6F1900386
Task Directive	TD2 Opt. 2
Entry Number	ALA-00622037
Inspection Number	20150508-1000-01
Catalyst Inspection Date	5/8/2015
Certificate Catalyst Manufacturer	Taizhou Oxin Catalyst Co., Ltd
Certificate Catalyst Part Number	WY35*100-200
Observed Catalyst Markings	WY-OX-II, AL F 6168

	Instrument Used	Starrett calipers (SN: 04231713)
	Date of Last Simco Calibration	5/6/2015

	1st Measured Value (mm)	2nd Measured Value (mm)	3rd Measured Value (mm)	4th Measured Value (mm)	Calculated Average Value (mm)	Percent Difference	Certificate Values
Diameter: outside of exhaust piping	Not measured	Not measured	Not measured	Not measured	--		
Diameter: outside of catalyst casing	35.02	35.02	35.05	35.12	35.05		
Diameter: inside of catalyst casing (catalyst diameter)	33.08	32.95	32.82	32.90	32.94		
Length: exhaust piping	Not measured	Not measured	Not measured	Not measured	--		
Length: catalyst casing	95.0	97.7	101.9	95.1	97.41		
Length: catalyst material	89.7	89.8	89.8	89.7	89.75		
Inset: catalyst casing (side 1)	Not measured	Not measured	Not measured	Not measured	--		
Inset: catalyst casing (side 2)	Not measured	Not measured	Not measured	Not measured	--		
Inset: catalyst substrate (side 1)	4.38	4.97	7.12	5.22	5.42		
Inset: catalyst substrate (side 2)	0.92	2.90	4.98	0.17	2.24		

Counted cells (total)	289	volume cc	76.47
Avg inside diameter of casing (in)	1.30	cells/in^2	218.82
PAIR Observed? (Y/N)	N	Certified with PAIR (Y/N)?	
PAIR Photo Name	--		

Estimated Surface Area of Honeycomb Catalyst

Units	Calc from Measured Values	Calc from Cert Values	Percent Difference
sq. mm	182,697	0	--
sq. in	283.2	0.0	--

	Calc from Measured Values	Calc from Cert Values
Honeycomb Face (sq mm)	852	
Area of One Cell (sq. mm)	2.95	
Radius of Semi-Circle	1.37	
cells/mm^2		

Counting Comments	None
Inspection Comments	Catalyst is certified with a PAIR, but no PAIR was observed with the exhaust system sent to ERG. It is possible that the vehicle contained a PAIR but it was not sent with the exhaust system to ERG.
Photo Used for Counts	'00386 - Cells Counted.jpg
Inspector	Dilan Bellinghoven
Report Date	5/8/2015

Catalyst Precious Metals Analysis

version 2014-10-20

Engine Family	FWGYC0.15S4A
VIN/Serial No.	LFFWKT3C6F1900386
Task Directive	TD2 Opt. 2
Entry Number	ALA-00622037
Inspection Number	20150508-1200-01
Catalyst Inspection Date	5/8/2015
Certificate Catalyst Manufacturer	Taizhou Oxin Catalyst Co., Ltd.
Certificate Catalyst Part Number	WY35*100-200
Observed Catalyst Markings	WY-OX-II, AL F 6168
Catalyst Type (Honeycomb or mesh)	Honeycomb

Instrument Used	X-5000 (S/N: 202212)
Calibration Curve Name	Metallic Curve 2015-01-16

Daily Calibration Results (Pre-Inspection)

	Check Standard #1 ID	Measured Value (ppm)	NEIC Value (ppm)	Maximum Percent Difference (%)	Percent Difference	Comments
Pt	00026	9,430	9,410	11.87%	0.2%	
Pd	00111	13,590	11,800	6.93%	15.2%	
Rh	00026	2,120	2,210	18.21%	4.1%	

Daily Calibration Results (Post Inspection)

	Check Standard # ID	Measured Value (ppm)	NEIC Value (ppm)	Maximum Percent Difference (%)	Percent Difference	Comments
Pt	00026	9,040	9,410	11.87%	3.9%	
Pd	00111	13,620	11,800	6.93%	15.4%	
Rh	00026	2,090	2,210	18.21%	5.4%	

Measured Metal Ratios

	Measured Value (% concentration, by weight)	Measured Value (ppm)	Calculated Ratio from Measurement
Pt	0.193	1,930	4.7
Pd	1.255	12,550	30.6
Rh	0.041	410	1.0
Ce	33.497	334,970	
Zr	14.914	149,140	

Certified Metal Ratios

	Reported Cert Loading Value	Reported Cert Loading Value Units	Calculated Loading Value (g/L)	Calculated Cert Ratio	Reported Cert Ratio
Pt		g		NA	
Pd		g		NA	
Rh		g		NA	
Total		g/ft^3			

Value to compare against measured: Reported Cert Ratio

Ratio Percent Difference (%)

Pt	
Pd	
Rh	

Loading Determination

Sample Extraction Method	Drilled holes
Weight of Extracted Powder (g)	1.32

Manually Extracted Volume (for loadings)

Hole #	Drill Bit Diameter (inches)	Hole Length/Depth (mm)	Hole Volume (mm^3)	Hole Volume (L)
Hole 1	0.25	89.75	2,842	0.002842
Hole 2	0.25	89.75	2,842	0.002842
Hole 3	0.25	89.75	2,842	0.002842
			Total Volume of Extraction Holes	0.008526

Loading

	Extracted Washcoat Powder Weight (g)	Calculated Metals Loading (g/L)	Cert Value - Loading (g/L)	Loadings Percent Difference (%)
Pt	0.00255	0.299		
Pd	0.01657	1.943		
Rh	0.00054	0.063		
Total	0.01965	2.30515		

Test Conditions	3 runs, 90 seconds each
Check Standards	The measured pre-inspection concentration of palladium for check standard 00111 was 15.2% greater than the NEIC value. The measured post-inspection concentration of palladium for check standard 00111 was 15.4% greater than the NEIC value.
Result Comments	
Related Photo(s)	DSCN0569, DSCN0572, DSCN0575, and DSCN0578
Inspector(s)	Dilan Bellinghoven
Report Date	5/8/2015